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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,231	04/16/2004	Scong Hak Moon	2080-3251	9655

35884 7590 12/05/2007  
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EXAMINER
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ABDULSELAM, ABBAS I

ART UNIT	PAPER NUMBER
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2629

MAIL DATE	DELIVERY MODE
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12/05/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/826,231	<b>Applicant(s)</b> MOON, SEONG HAK	
	<b>Examiner</b> Abbas I. Abdulsalam	<b>Art Unit</b> 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10/15/2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed on 10/15/2007 have been fully considered but they are not persuasive.

Applicant argues that the cited reference Rumbaugh et al. (USPN 6031336) does not teach: a resistor connected between an anode electrode and a spacer ground electrode of an FED, and a switch unit for selectively connecting the resistor to the anode electrode or to the spacer ground electrode in order to discharge electric charge charged in a spacer of the FED during a blanking time period.

However, as shown in the art rejection below, Rumbaugh teaches a scanning mode and a discharge mode. During the scanning mode, potentials are sequentially applied to conductive rows 115. By scanning it is meant that a potential suitable for causing electron emission is selectively applied to the scanned row, such that as shown in Fig. 3 both scanning mode and discharge mode configurations are characterized by switch the operation of a switch (129) (col. 4, line 50-62, col. 5, lines 61-67, col. 6, lines 14-22). Note that as electron emission is selectively applied to the scanned row, the path of the emission takes its natural course across the rows. Further note that as shown in Fig. 10, Rumbaugh teaches the switch (129), and an anode (124) such that to discharge the anode (124), anode voltage pull-down current (119) flows from anode 124 to cathode plate 110 through spacer 136 (which functions as shunt resistor). Furthermore, Rumbaugh teaches a pull-down and discharge steps occurring at the end of a display frame subsequent to one scanning cycle, and discloses other suitable timing including

execution of multiple frames (col. 5, lines 36-40) (it would be obvious to one of ordinary skill in the art that a display frame of FED has to have a blanking time).

Hence, It would have been obvious to one of ordinary skill in the art at the time the invention was made to recognize Rumbaugh's switch shown (129) in Fig. 3 (which is attributed to selective electron emission through scanning), and utilize a spacer (136) functioning as a shunt resistor as demonstrated in Fig. 10 the purpose of providing simultaneous emission of electron as taught by Rumbaugh.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to one of ordinary skill in the art at the time the invention was made to recognize Rumbaugh's switch shown (129) in Fig. 3 (which is attributed to selective electron emission through scanning), and utilize a spacer (136) functioning as a shunt resistor as demonstrated in Fig. 10 the purpose of providing simultaneous emission of electron as taught by Rumbaugh..

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rumbaugh et al. (USPN 6031336).

Regarding claims 1 and 16, Rumbaugh teaches a spacer discharging apparatus/method of an FED (field emission display) (*col. 3, lines 40-43*), comprising: a resistor connected between an anode electrode (122) and a spacer ground electrode of an FED (136, 110) (*col. 3, lines 44-50, col. 4, lines 16-21, col. 9, line 20-22, also with inference to Fig. 10, a spacer (136) of display device (102) functions as a shunt resistor*), wherein the resistor is connected between the anode electrode and the spacer ground electrode (*as seen in Fig. 10, a spacer (136) is connected between anode (124) and cathode plate (110)*)

*While Rumbaugh teaches a switch (129) as shown in Fig. 3,*

Rumbaugh does not specifically teach “a switch unit for selectively connecting the resistor to the anode electrode or to the spacer ground electrode in order to discharge electric charge charged in a spacer of the FED during a blanking time period”.

*Rumbaugh on the other hand teaches a scanning mode and a discharge mode. During the scanning mode, potentials are sequentially applied to conductive rows 115. By scanning it is meant that a potential suitable for causing electron emission is selectively applied to the scanned row, such that as shown in Fig. 3 both scanning mode and discharge mode configurations are characterized by switch the operation of a switch (129) (col. 4, line 50-62, col. 5, lines 61-67, col. 6, lines 14-22).*

*Note that as electron emission is selectively applied to the scanned row, the path of the emission takes its natural course across the rows. Further note that as shown in Fig. 10, Rumbaugh teaches switch (129), and anode such that to discharge the anode (124), anode voltage pull-down current (119) flows from anode 124 to cathode plate 110 through spacer 136 (which functions as shunt resistor). Furthermore, Rumbaugh teaches a pull-down and discharge steps occurring at the end of a display frame , subsequent to one scanning cycle, and discloses other suitable timing including execution of multiple frames (col. 5, lines 36-40) (it would be obvious to one of ordinary skill in the art that a display frame of FED has to have a blanking time)*

*It would have been obvious to one of ordinary skill in the art at the time the invention was made to recognize Rumbaugh's switch shown (129) in Fig. 3 (which is attributed to selective electron emission through scanning), and utilize a spacer (136) functioning as a shunt resistor as demonstrated in Fig. 10 the purpose of providing simultaneous emission of electron as taught by Rumbaugh.*

Regarding claim 2, Rumbaugh teaches the switch unit is connected in series between the anode electrode and the spacer ground electrode and selectively turned on/off (*col. 5, lines 66-67, col. 6, lines 1-5*).

Regarding claim 3, Rumbaugh teaches the switch unit applies a pulse control signal in synchronization with a vertical synchronous signal to the anode electrode during an interval where a voltage applied to the anode electrode is cut off (*col. 5, lines 61-65, disconnect col. 7, lines 17-31, also see fig. 5*).

Regarding claims 4 and 17, Rumbaugh teaches the switch unit applies a pulse control signal in synchronization with a vertical synchronous signal to the anode electrode during a blanking time period (*col. 7, lines 17-31, also see fig. 5 and Fig. 2, time axis*).

Regarding claim 5, Rumbaugh teaches the blanking time period indicates time during which no image is displayed on a screen of the FED or a pulse duration of the vertical synchronous signal (V sync) (*col. 7, lines 17-31, also see fig. 5, col. 6, lines 14-18*)

Regarding claims 6-7 and 18, Rumbaugh teaches the pulse control signal is repeatedly applied at certain period intervals on the basis of the vertical synchronous signal (*col. 6, lines 66-67, col. 7, lines 1-16, see fig. 5*).

Regarding claim 8, Rumbaugh teaches the switch unit comprises: a switch for selectively connecting the anode electrode and the spacer ground electrode (*Fig. 4 (129, 175), col. 6, lines 30-32*); a buffer and inverter signal unit for outputting a control signal to control the switch (*col. 6, lines 51-53, Fig. 4 (130)*); and a transistor for outputting a driving current to drive the switch upon receiving a control signal from the buffer and inverter signal unit (*col. 6, lines 54-65*)).

Regarding claim 9, Rumbaugh teaches the switch is one of a high voltage relay, a high voltage switch and thyristor (*col. 6, lines 1-5*).



Regarding claim 10, Rumbaugh teaches the switch is turned on when a current flows to the transistor, and turned off when no current flows to the transistor (*col. 6, lines 14-22*).

Regarding claims 11-12, and 19, Rumbaugh teaches a protection resistor (*Fig. 4 (167)*) connected between the anode electrode (*124*) and a high voltage power source unit (*126*) applying a high voltage to the anode electrode (*see fig. 4 (124, 126, 167), col. 5, lines 61-65*).

Regarding claims 13-15 and 20, Rumbaugh teaches the resistor controls discharge time and a residual voltage (*col. 5, lines 40-52, Fig. 2, one of ordinary skill in the art would have ascertained that a switch (129) shown in Fig. 3 or Fig. 10 could be configured in the circuit diagram in a desired location for the purpose of executing the functionalities the circuit diagram*).

### ***Conclusion***

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Abbas I. Abdulsalam whose telephone number is 571-272-7685. The examiner can normally be reached on Monday through Friday from 9:00A.M. to 5:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe, can be reached on 571-272-7691. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
RICHARD HJERPE  
SUPERVISORY PATENT EXAMINER  
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Examiner  
Art Unit 2629  
November 30, 2007